REPUBLIC OF SLOVENIA

MINISTRY OF TRANSPORT

RAILWAY ACCIDENT AND INCIDENT INVESTIGATION DIVISION

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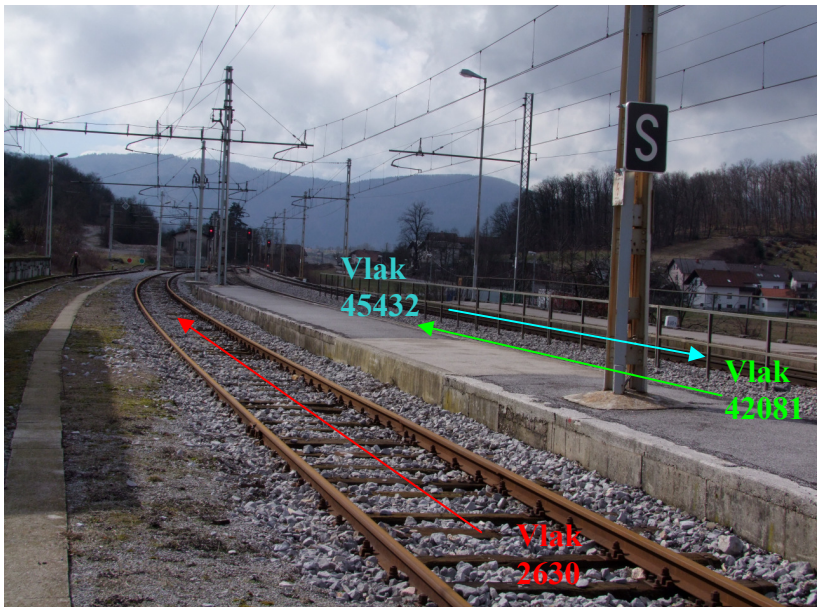
Number: 375-7/2009/15
Date: 6 May 2009

FINAL REPORT ON THE INVESTIGATION INTO A RAILWAY INCIDENT – THE DISPATCH ON 16 JANUARY 2009 OF PASSENGER TRAIN NO. 2630 ONTO A LOCKED RAILWAY TRACK FROM THE PRESERJE STATION TO THE BOROVNICA STATION



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1 SUMMARY

On 16 January 2009 at 08:28, the traffic controller at the Preserje station dispatched local passenger train no. 2630 onto the locked left-hand track of the double-track railway line towards the Borovnica station.

The direct cause for train no. 2630 to be dispatched onto the left-hand track running between these two stations was a non-set up and unprotected exit route for the train to drive onto the wrong right-hand track during an unexpected locking of the left-hand track.

Between 07.58 and 09.48 on that day, there was two-way rail traffic on this section of the railway line on account of an unexpected locking of the left-hand track between the stations Preserje – Borovnica – Verd. At the Preserje station, trains coming from the direction of Ljubljana in the Sežana direction therefore had to pass from their correct left-hand track onto the incorrect right-hand track.

Moreover, a failure occurred on that day at 06.03 in the functioning of the 22 exit signal and the 5D shunting signal at the Preserje station.

Because of the failure of the exit signal (IS-22) and the shunting signal (PS-5D), not permitting the signals to be moved from the movement-forbidden position to the movement-allowed position, the Preserje station traffic controller was – at the time of the failure – giving authority in writing (General Order P-14) to trains exiting the Preserje station and heading for the Borovnica station to drive past exit signal 22.

The cause of the incident was the non-set up and unprotected exit route for train no. 2630 from track no. 2 (two) at Preserje station.

Recommendations:
- personnel in charge of executing railway operations need to undergo training on an ongoing basis, focusing on traffic management in emergency circumstances, especially unexpected and expected lockings and failure at interlockings.
- crossing procedures need to be more clearly defined by means of regulations. Clearly defined crossing procedures can be of great help to traffic managing personnel at times of unexpected and expected lockings of either of the two-track railway lines.
- traffic management protocols for all known exceptional situations need to be laid down in such a way as to include all functions that must be performed, as well as the time sequence of their performance.

1.1. Copies of the Accident Report with Recommendations to:

Slovenske železnice, d.o.o.
Kolodvorska 11
1506 Ljubljana

Republic of Slovenia
Ministry of Transport
Minister, Dr Patrick Vlačič
Langusova, 4
1000 Ljubljana

The Public Agency for Rail Transport of the Republic of Slovenia
Kopitarjeva 5
2000 Maribor

ERA – European Railway Agency
160 boulevard Harpignies
BP 20392
F-59307 VALENCIENNES Cedex

2 IMMEDIATE FACTS OF THE OCCURRENCE

The arrival time of train no. 2630 as recorded in the P-13 traffic logbook of the Preserje station is incorrect, the first departure of the train not even having been recorded.
In the P-13 traffic logbook at the Preserje station, track no. 3 (three) was entered as the entrance and exit track of train no. 2630, which was incorrect, since track no. 3 (three) was occupied by train no. 42081 from 05:12 until 09:15.
The failure of the exit signal was not reported and is therefore not recorded in the V-11 record.
The data recorder clock of train no. 2630 was set neither to the station clocks nor to the clock of the Preserje station ILTIS interlocking.
Train no. 2630 was dispatched to the locked left-hand track running from the Preserje station towards the Borovnica station.
Points no. 6 (six) were set – immediately before train no. 2630 approached – to points meter 5 (five), which activates the "occupied" point status and guards the entire points area against further manipulation.
Points no. 6 (six) and 7 (seven) were set individually, while the exit route for train no. 2630 was neither fixed nor protected.
The Investigation Commission of Slovenske železnice that drew up the Commission report on the incident investigation had not analysed the investigation materials in sufficient detail, which resulted in an incorrect definition of the incident: "Incorrectly protected exit route for train no. 2630", instead of: "The dispatch of train no. 2630 onto the locked left-hand track running from the Preserje station towards the Borovnica station".
Since points no. 6 (six) were set directly before train no. 2630 arrived, there existed at that moment a strong probability of derailment of the train on account of possible movement between switch rails and main rails towards the switch rail.
Had train no. 2630 indeed driven onto the locked left-hand track, an accident or serious accident could have happened under circumstances not much different from those described above.

2.1 Date, exact time and location of the occurrence

The incident – the dispatch of train no. 2630 onto the left-hand track running from the Preserje station towards the Borovnica station – occurred after the train was dispatched from track no. 2 (two) of the Preserje station at 08:28 on 16 January 2009.

2.2 Description of the events and the accident site

On 16 January 2009 at 04.51, on exiting side "B" of the Borovnica station, the pantograph of train no. 2600 got stuck in the cable. The train ruptured the cable with the pantograph. The point of rupture at side "B" of the station's left-hand track was impassable for electric vehicles with raised pantographs; therefore, trains were subsequently travelling between the stations Preserje – Borovnica and Verd, exceptionally, along a wrong, right-hand track until 07.58, when an unexpected locking of the left-hand track was implemented; from that moment on, trains were travelling between these stations in the form of unexpected passage along a wrong track because the ruptured electric network needed to be repaired.

The unexpected locking was implemented by the Borovnica station traffic controller in order for inspection and repair of the electric network to be carried out, as required by the electric network maintenance team, Sekcija za elektro energetika Pivka.

Rail traffic was continuing at the Preserje station despite the failure of the exit signal (IS-22) and shunting signal (PS-5D) not allowing the signals to change their position from movement-forbidden to movement-allowed. At the time of the above failure, trains were exiting the Preserje station heading for the Borovnica station by means of written authority allowing the trains to bypass exit signal no. 22, communicated to locomotive drivers with General Order P-14.

Figure 1: Preserje station tracks

Rail traffic at the Preserje station continued unimpeded along track no. 2 (two) in the Borovnica station direction and along track no. 4 in the Brezovica (and Ljubljana) direction until the departure of train no. 2630 at 08:28, when the traffic controller at the Preserje station dispatched the train onto the locked left-hand track. Track no. 3 (three) was occupied by train no. 42081, which had arrived at the station at 05:12 and was dispatched from track 3 (three) at 09:15.

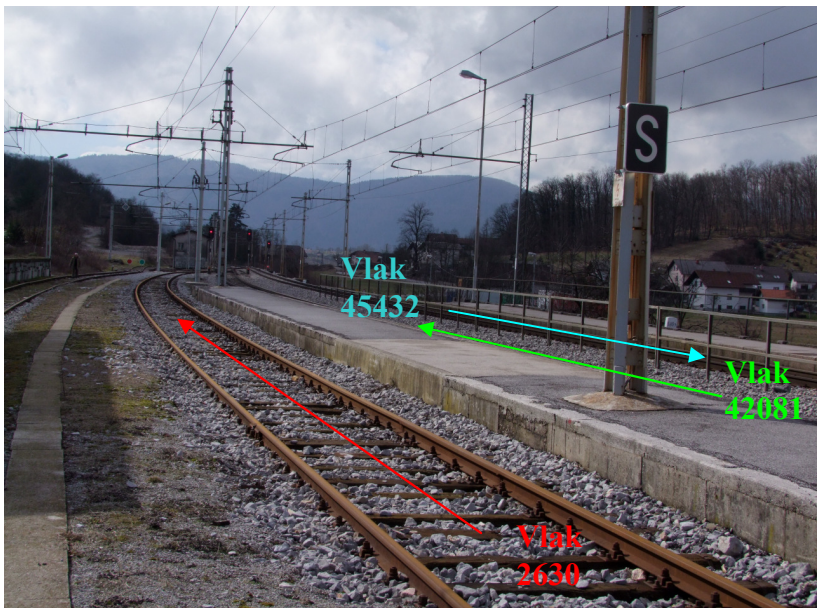

Figure 2: Tracks and direction of travel of trains

The Preserje station traffic controller stated in the minutes of the hearing of an employee – a witness under examination – that immediately following the passage of train no. 45432 along track no. 4 (four) he started protecting the exit route for train no. 2630, which at that very moment was travelling along the railway line from the direction of the Brezovica station towards the Preserje station. The traffic controller also stated that immediately following the passage of train no. 45432 (recorded in the P-13 traffic logbook at 08.21 along track no. 4 (four) of the Preserje station towards Ljubljana), he manually moved points 5 (five) and 6 (six).

This part of the traffic controller's statement is not true, because the order for the movement of points no. 6 (six) was only given at 08:28:13, which is evident from the recorded protocol of operations carried out at the interlocking. Train no. 2630 arrived at track no. 2 (two) from the Ljubljana direction at 08:26, which is evident from the analysis of the speedometer record (in the P-13 traffic logbook the time of arrival of train no. 2630 is incorrectly recorded as 08:33 and at incorrect entrance track no. 3 (three) instead of track no. 2 (two)).

Train no. 2630 was dispatched from track no. 2 (two) at 08:27:55 without the train route to the incorrect right-hand track having been set up and protected. Points no. 6 (six) and 7 (seven) were set to the "straight" position from the very setting up of the route for train no. 45432 to move along track no. 4 (four) from 08:17:36 until 08:28:13, when the traffic controller moved the points from the "straight" position to the "deviation" position, immediately preceding the approach of train no. 2630 to points no. 6 (six). It follows therefrom that the exit route for train no. 2630 was set to the locked left-hand track; this can be deduced from the recorded protocol of interlocking operations and from a comparative analysis of the travelling times of train no. 2630 recorded in the traffic logbooks of the stations Brezovica, Preserje and Borovnica, and from the travelling times of train no. 2630 recorded in the train's recorder.

2.3 The body that established the investigation

The investigation procedure was launched by the Section for investigating railway accidents and incidents of the Ministry of Transport of the Republic of Slovenia and by Slovenske železnice, d.o.o.

The two investigations were conducted separately.

2.4 The decision to establish an investigation, the composition of the team of investigators and the conduct of the investigation

The Railway Accidents and Incidents Investigation Department of the Ministry of Transport of the Republic of Slovenia established the investigation of the incident, which, in the event of train no. 2630 having actually driven onto the locked left-hand track under similar, not significantly differing circumstances, would have resulted in an accident or even a serious accident.

The Chief Investigator of the Ministry of Transport of the Republic of Slovenia conducted the investigation and brought it to a close himself.

Slovenske železnice, d.o.o. conducted its investigation through an investigation commission.

2.5 The background to the occurrence

Train no. 2630, its locomotive driver and the Preserje station traffic controller were involved in the incident. The incident occurred at 08:28, which is 1 hour and 28 minutes after the Preserje station traffic controller started his shift, after taking over traffic control at 7:00 from the previous traffic controller

In the Preserje station P-13 traffic logbook there is no recorded departure of train no. 2630 directly after the first dispatch; there is, moreover, an erroneous indication of entrance and exit track no. 3 (three) instead of the correct track no. 2 (two).

In the Preserje station P-13 traffic logbook, the entered voice text on the crossing of train no. 45432 with train no. 48021 at the Preserje station is neither correct nor complete (the number of train no. 48021 is not correct); the correct number entered should have been 42081, which is the train that occupied track no. 3 (three) of the Preserje station; there is no number – either for handing over or for acceptance – entered in the voice text.

The voice text entered in the Preserje station P-13 traffic logbook on the crossing of train no. 49600 with train no. 2630 at the Verd station and train no. 42081 at the Preserje station is neither correctly nor completely recorded (the voice text is entered in two lines, with a double sign for crossing used for one crossing), and there is no indication in the voice text of train no. 48081, which train no. 2630 crossed at the Borovnica station; moreover, the voice text contains neither the handing-over number nor the acceptance number. No fault report was filed for the interlocking device, and there was no indication of the fault in the operation of the IS-22 exit signal and 5D shunting signal, and the fault was not registered in the record of faults/failures at the V-11 interlocking.

The traffic controller was tested for alcohol by means of a Dräger Alcotest 6510. The result was negative.

2.5.1 Staff involved

The traffic controller at the Preserje station, Sekcija za vodenje projeta Postojna, Slovenske železnice d.o.o..

The locomotive driver of train no. 2530, Delovna enota Ljubljana, Sekcija za vodenje prometa Ljubljana, Slovenske železnice d.o.o.

2.5.2 The trains and their composition, including the registration numbers of the items of rolling stock involved

Train no. 2630 consisted of an electric engine set of two units, no. 9479 6 312 101-9 and no. 9479 6 312 102-7, and an intermediate element no. 9479 6 317 101-4. The weight of the electric engine set was 110 tonnes, and the length 57450 mm.

2.5.3 The description of the infrastructure and signalling system – track types, switches, interlocking, signals, train protection

To control the electronic signalling box, the Preserje station uses the ILTIS system locally at the station (**I**ntegrales **L**eit und **I**nformations **S**ystem – The Integrated Control and Information System), manufactured by SIEMENS, The ILTIS system is customised to fit the work post at the station or the work post at the traffic management centre. The work post is filled by the man-machine-organisation interface (computer equipment).
The ILTIS system enables:

- operation of the electronic signalling box (displays, regular, critical and emergency operation);
- rail traffic tracking (by means of train numbers);
- train management (automatic movement of rail traffic, data on trains);

- depot management.

The Preserje station is equipment with exit track signals with pertaining shunting signals and entry signals.
Rail traffic between neighbouring stations runs on the basis of inter-station spacing, which means that only one train can be positioned on one inter-station section at one and the same time.
All principal signals on the entire railway line are equipped with the track part of automatic stop devices – track magnets ASn, Type SIEMENS. Built-in are combined 1000/2000 Hz track magnets and 500 Hz local control track magnets preceding entry signals. Track magnets are either active or non-active according to the signal of the pertaining main signal.

2.5.4 Means of communication

The traffic controller's workstations on the Ljubljana – Postojna railway section are equipped with Neumann PTS consoles with direct lines to the:
- conductor, for direct connection with traffic controllers of neighbouring stations;
- dispatcher conductor, for direct connection with the master dispatcher;
- dispatcher line for direct connection with the train dispatcher;
- electric wire for direct connection with feeder/supply stations of the drive conductor;
- accident/incident conductor for direct connection with dispatchers, to be used in case of accident or incident;
- construction conductor for direct connection with construction workers when infrastructure maintenance works are in progress;
- interlocking conductor for interlocking maintenance;
- track conductor, to which all telephones at inter-station sections covered by individual stations are included.

2.5.5 Works carried out at or in the vicinity of the site

At the time of the accident, there were no building works in progress at the site of the accident or in its vicinity. At the time of the incident, workers of Slovenske železnice d.o.o., Sekcija za elektro energetiko Pivka, were in the process of eliminating a damaged spot in the electric network, at the points area of the "B" side of the neighbouring Borovnica station.

2.5.6 Trigger of the railway emergency plan and its chain of events

Since there were no persons injured and no material damage, no railway emergency plan or chain of events needed to be activated.

2.5.7 Trigger of the emergency plan of the public rescue services, the police and the medical services and its chain of events

Since the event under consideration was only an incident related to traffic management and not an accident, no emergency plans involving public rescue services, the police or medical services needed to be triggered.

2.6 Fatalities, injuries and material damage

There were no fatalities, injuries or material damage involved in the incident.

2.7 External circumstances

Weather conditions at the time the accident occurred: Occasional snowflakes, -1 ºC, good visibility.
At the Preserje station area, the rail track runs in a double "S" curve, passing from right to left at the very points area at the "B" side of the station.

3 RECORD OF INVESTIGATIONS AND INQUIRIES

On 16 January 2009 at 09:20, the Chief Investigator of the Ministry of Transport inspected the site of the accident.
On 6 March 2009, the Chief Investigator of Railway Accidents and Incidents of the Ministry of Transport carried out measurements of the tracks and track equipment.
Investigation material was acquired from Slovenske železnice d.o.o., Sekcija za vodenje prometa Postojna (Postojna Traffic Management System) no. 2.1.6.-33/09 dated 10 February 2009.
Investigation material was acquired from Slovenske železnice d.o.o., Sekcija za vleko Ljubljana, no. 3.3.4.-12760/2009-9/4, dated 23 February 2009, and no. 3.3.4.-12760/2009-9/4, dated 11 March 2009.
A written explanation was acquired of the ILTIS protocol of the Preserje station for 16 January 2009 from Slovenske železnice d.o.o., Sekcija SVTK Pivka, no. 2.2.13.-215-III/3-07-MM, dated 17 March 2009.
The Commission report on incident investigation no. 2/2009 from Slovenske železnice d.o.o., Sekcija za vodenje prometa Postojna (Postojna Traffic Management Section), dated 12 March 2009, was received.
On 9 April 2009, the Chief Investigator of the Railway Accidents and Incidents of the Ministry of Transport interrogated the locomotive driver of train no. 2630, based on which he then issued minutes of the interrogation of the railway employee – witness in the incident, no. 375-7/2009/13.

3.1 Summary of testimonies

In his statement describing the event, the Preserje station traffic controller involved in the incident stated that after the passage of train no. 45432 he began protecting the exit route for train no. 2630 and manually moving points no. 5 (five) and 6 (six); thereafter, on account of a great deal of work (there were interlocking maintainers at the station, the traffic controller was selling train tickets, making arrangements related to the locked track), he forgot to move points no. 7 (seven) to the correct and accurate position. The traffic controller then goes on to add that he thought that he had set the exit route for train no. 2630, but that he had not made sure, and had taken transport documentation to the train locomotive driver. After the train pulled off, the traffic controller went to his office and realised that the exit route for train no. 2630 was not protected. He went to the front of the station to stop the train. He noticed that the train was already standing at the exit points.

In his statement, the locomotive driver of train no. 2630 made no mention of noticing, while the train was in motion, any change of position of points no. 6 (six) or any change in the points position directly preceding the approach of the train.

3.2 The safety management system

The devices of the electronic signalling box are operated by the traffic controller by means of electronic devices for the operation locally (at the station) of the electronic signalling box and traffic management with a monitor display.
The operation of the electronic signalling box is intended for:

- regular operation;
- operation of individual elements (points, signals, etc.);
- route setting;
- control/operation of additional devices;

- emergency operation;
- switching on and off of lockings of track elements for travelling routes;
- switching on and off of lockings blocking the movement of points;
- emergency operation to bypass the safety level;
- making undesired and illogical orders impossible;
- switching on and off of lockings of target signals, etc.

The monitor of the local workstation displays the track layout of the pertaining station.
The track layout consists of element symbols (symbols of points, signals, tracks, etc.). The presentation of the track layout and positions of individual elements and detectors in elements on the display are described in detail in the ILTIS catalogue of symbols.

3.3 Rules and regulations

Safety of Railway Transport Act, Uradni list RS, No. 61 of 10 July 2007.

Traffic management during the time individual tracks of a two-track railway line are locked is governed by Article 169 of the Traffic Rules, dated 12 January 2009.

Crossings of trains are governed by Article 155 of the Traffic Rules, dated 12 January 2009.

3.4 Functioning of rolling stock and technical installations

Points no. 5 (five), 6 (six) and 7 (seven) of the Preserje station are provided with an electro-hydraulic power source, enabling, in unimpeded operation, the points to be moved from one position to another within 6 seconds. The operation of the power source was unimpeded at the time of the incident.

The IS-22 exit signal of the Preserje station, positioned at km 580,831, and the PS-5D shunting signal, positioned at km 580,829, were out of order at the time of the incident.

3.5 Documentation on the operating system

At the time of the incident, the operation of the ILTIS interlocking device at the Preserje station was prescribed by the "Rules on traffic management and operation of interlocking devices at the Preserje station" issued by Holding Slovenske železnice d.o.o., dated 19 November 2003.

3.6 Man-machine-organisation interface

The position of traffic controller represents the man-machine-organisation interface, consisting of:

- computer equipment connected to the electronic devices of the electronic signalling box;
- an adequate number of high-definition monitors displaying the track layout and all the accompanying windows of the Windows operating system necessary to operate the electronic signalling box and manage rail traffic;
- keyboard for entering text and numbers;
- mouse with various forms of pointer, and
- printer.

3.7 Previous occurrences of a similar character

In 2007 and 2008, one incident occurred each year on the railway section between the Ljubljana and Postojna stations, the cause of which was a fault in rail traffic management.

At 13:30 on 3 October 2007, occupied track no. 4 of the Verd station was set for the entry of train no. 2751, and a collision with train no. 50351 standing there was prevented. Train no. 50351, travelling from the Logatec direction to the Verd station, passed through the Verd station at 12:22 on track no. 4 and stopped at the exit side of the station because the vigilance

device was activated which caused the rupture of the main aerial conductor. The train was positioned partly on the inter-station section and partly on the station section, which was, however, not visible from the front of the station building. After train no. 50351 stopped, the locomotive driver failed to report to either the train dispatcher or to the rail traffic dispatcher. At 12:27, train no. 2751 pulled off from the Logatec station; its set regular entry track at the Verd station was track no. 4. The Verd station train dispatcher noticed that track no. 4 was occupied at the exit side of the station; he was convinced, however, that this was mock occupancy of the track, a consequence of maintenance works carried out by workers of the signalling and safety service. The train dispatcher used a subsidiary signal to release the unreleased route in order to set the entry for train no. 2751 on track no. 4; the train arrived at the track at 12:37. The train dispatcher waited for the train to arrive and then returned to his office. Immediately afterwards, the locomotive driver of train no. 2751 pulled out without having received a departure signal. The locomotive driver noticed the rear of train no. 50351 at the exit points area, and stopped his train before colliding.

At 05:02 on 22 May 2008, a collision was prevented of train no. 2600 with train no. 38020 standing before the "A" entry signal of the Logatec station. After train no. 38020 passed through the Verd station, the Logatec station train dispatcher held the train back in front of the "A" (US-A) entry signal of the Logatec station in order to protect the passengers on train no. 2601. After the exit of train no. 2601, the Logatec station train dispatcher informed the Verd station of the time of the train departure, and at the same time submitted the notice of departure for train no. 38020 although the train had not yet entered the station. When setting the Logatec station track no. 2 as the entry route, the entry signal failed to be set to the movement-allowed position because the buttons on the interlocking device were being operated with excessive speed. Since the Verd station train dispatcher received the notice of departure for the previous train, he dispatched train no. 2600 to the occupied railway line section. Train no. 2600 was stopped at the railway line by the radio dispatcher. Train no. 2600 was positioned on the track until train no. 38020 withdrew to track no. 2 of the Logatec station – after the route had been re-established – and then continued on its way after permitted to do so by the train dispatcher.

4 ANALYSIS AND CONCLUSIONS

It can be concluded from the record of the movements of train no. 2630 that the movement of the train – from the moment the train pulled out on track no. 2 (two), at km 580,650, at 08:27:04, until it stopped at points no. 7 (seven) at 08:28:02 – totalled 58 seconds. In this time, train no. 2630 travelled 314 metres, of which during acceleration to up to 25 km/h, which lasted 36 seconds according to calculations, it travelled 179 m with a constant speed of 25 km/h, then 100m in 16 seconds, and 35 metres when it was braking, which lasted 6 seconds.

The calculation took into account the deceleration occasioned by the activation of the high-speed brake, which, in the case of EMG 312-102, is 1.2 m/s^2.

According to calculations, the train was positioned at km 580,650 before pulling out from track no. 2 (two), which is 39 metres before the 204 sign: "Stopping point" at Platform 1 of the Preserje station.

Station	**Entry/ Exit track**	**Arrival/ Departure (from timetable)**	**Arrival/Departure (from P-13)**	**Arrival/Departure (from train speedometer)**	**Setting of points at ILTIS interlocking**	**Stopping of the train at exit side, preceding points 7**
Brezovica	4	8:16	8:17(1)	8:15:27(1)		
	4	8:17	8:17(1)	8:16:29(1)		
Preserje	2	8:23	8:33	8:25:16	8:18:42	
	2	8:24	8:37	8:27:04(1)	8:28:13(1)(2)	8:28:02(1)(2)
				8:36:20(1)	8:36:26(1)	
Borovnica	3	8:28	8:42(1)	8:41:33(1)		
	3	8:29	8:43(1)	8:42:07(1)		

Table 1: Comparative analysis of times of the travelling train no. 2630, recorded in the traffic logbook, in the train movement record, and in the ILTIS interlocking of the Preserje station

(1) It is possible to claim with certainty on the basis of a comparative analysis of the recorded times that the times recorded in the train movement record for train no. 2630, when compared to other times (recorded in the P-13 traffic logbook or in the ILTIS interlocking), lag between 30 seconds and one minute behind. This proves that train no. 2630 was dispatched from the Preserje station to a locked track and that an order was given to the ILTIS interlocking for points no. 6 (six) to be moved immediately preceding the approach of the train with its first axle at the meter protecting the entire points area against further interventions, in this particular case, side "B" of the Preserje station.

(2) The analysis of compared times explains, *inter alia*, the cause of recording 08:28:02 as the time when the train stopped in front of points no. 7 (seven), which happened before points no. 6 (six) had been set to deflection from track no. 3 (three) towards track no. 4 (four), which can be deduced from the information sheet of the ILTIS interlocking, and it was at 08:28:13.

Points no. 6 (six) were indeed moved at 08:28:13 according to the time recorded in the ILTIS interlocking, while the train stopped at 08:28:02 according to the time recorded by the train movement recorder, which is physically impossible since in this case the train would have actually moved onto a wrong track; on the other hand, it can be concluded on the basis of the communication recorded between the Preserje station traffic controller and the locomotive

driver of train no. 2630 that the train indeed stopped in front of points no. 7 (seven) of the Preserje station at 08:29.

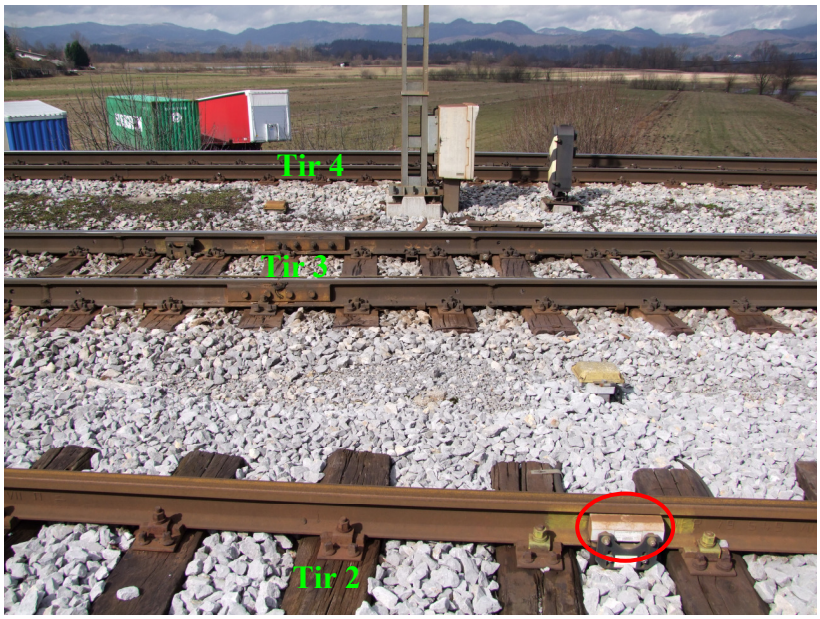

Figure 3: Axle meter, circled in red, of the ILTIS interlocking, making it impossible, when a track vehicle axle approaches, for the points to be moved to any position in the entire points area covered by the meter, in this case side "B" of the Preserje station

Taking into account the calculation of the time of passage of train no. 2630 – between pulling out after receiving the movement-allowed signal, while travelling along track no. 2 (two) until it stopped at points no. 7 (seven), which totalled 58 seconds – it can be claimed that the Preserje station traffic controller had enough time after dispatching the train to go to the Traffic Office and move points no. 6 (six) from the straight to the angled position. The traffic controller obviously ran out of time to move points no. 7 (seven), since at that moment the train had already arrived at the meter of the 5D shunt signal of points no. 5 (five), which prevented this manipulation.

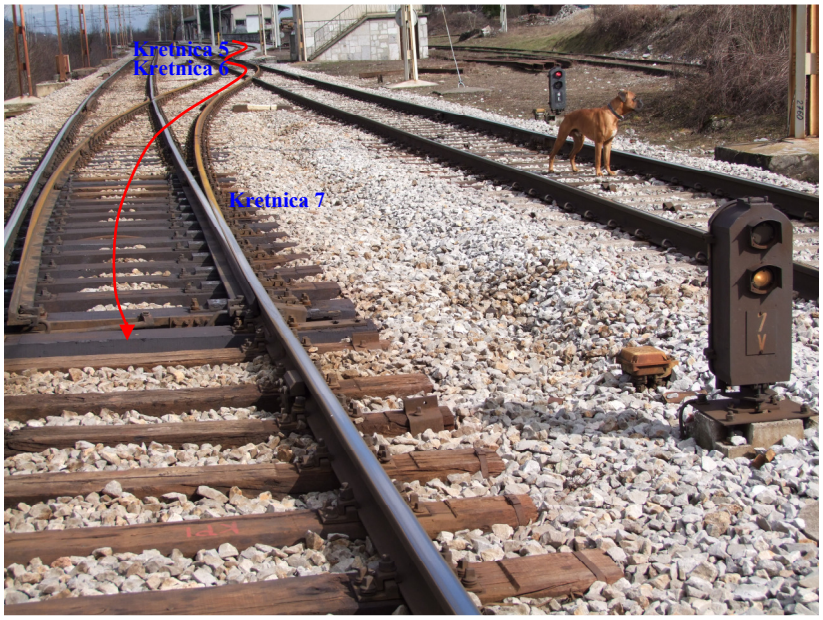

Figure 4: View of the train travelling over the controversial points area at side "B" of the Preserje station

According to calculations, the passage of train no. 2630 lasted 37 seconds, from the point it stopped at the entry to track no. 2, at km 580,650, along Platform 1 (one), to the 5D shunt signal at km 580,829 (a distance of 179 m).

4.1 Final account of the event chain

On 16 January 2009, train no. 2630, on leaving the Preserje station, would have driven onto a locked left-hand track had the traffic controller not managed, directly in front of the train, to move points no. 6 (six) from the straight to the angled position.

Despite the fact that no serious consequences arose from the incident, it needs to be taken into consideration that, under circumstances that would not have differed substantially, an accident or even a serious accident could have occurred.

Given the number of errors committed in the records kept of the situation before, during and immediately following the event, it can be deduced that the traffic controller on duty at the Preserje station at the time of the incident lacked sufficient work experience and organisational skills to handle emergency situations of this or similar type.

4.2 Discussion

A broader debate on the incident was held with supervisors of the rail traffic management of Sekcija za vodenje prometa Postojna (Postojna Traffic Management Section). All those participating in the debate were unanimous in their opinion that there was no programme for practical training of traffic controllers that would stipulate hands-on, on-the-job training in detail.

4.3 Conclusions

It was established during the investigation that, when setting and protecting the exit route for train no. 2630 on 16 January 2009, the safety of rail traffic was jeopardised, which under circumstances not essentially different could have resulted in an accident or even a serious accident.

Despite the facts clearly pointing to the type of event and the cause of its occurrence, the Commission of Slovenske železnice, d.o.o, when concluding the incident in the Commission conclusion on the investigation of incident no. 2/2009, took the view that in this particular case the train was not dispatched to the locked track but that all there was to it was that the exit route for train no. 2630 was incorrectly set and protected.

Rail traffic management must be clearly defined for all known cases, and all known safety elements must be included that could in one way or the other prevent mishandling, or must exclude, to the greatest possible extent, the impact of the human factor. Traffic management regulations should be elaborated so as to define protocols clearly and unequivocally, especially when known exceptional situations are involved.

It is a fact that – in cases of either track of a two-track railway line being closed – trains cross at both stations of the passage from two-track to single-track traffic. Two-track traffic consists of meeting and passing only. The crossing of trains at times of expected and unexpected lockings of either track of a two-track railway line is not laid down with sufficient clarity in the Traffic Rules.

4.4 Additional observations

Clocks built into various devices used in rail traffic management and in vehicles are often not synchronised because they are manually set by operators or maintainers of these devices. It would be reasonable to consider the possibility of centrally synchronising the clocks in order to ensure uniformity and exclude any doubt as to the timing of individual events.

Protocols of all known exceptional situations in traffic management are not defined in regulations in sufficient detail or centralised in one place. This indeed causes confusion, in particular in younger staff still lacking work experience, which is evident from the investigation of the above incident.

4.5 Measures that have been taken

Slovenske železnice, d.o.o. temporarily suspended – until the end of the shift – their employee, i.e. the Preserje station traffic controller, who, on 16 January 2009, dispatched train no. 2630 onto a closed left-hand track from track 2 (two) of the Preserje station towards the Borovnica station, and instituted disciplinary proceedings against him on the grounds of an incorrectly set and protected exit route.

No other measures have been taken.

4.6 Recommendations

The managing railway staff in charge of rail traffic must undergo training on an ongoing basis, with particular emphasis being laid on the implementation of traffic management in exceptional situations, such as at times of unexpected and expected lockings and failures of interlocking devices.

The procedures of implementing crossings must be defined in regulations in a clearer way. Clearly defined crossing procedures can be of great help to traffic management staff during unexpected and expected lockings of either track of a two-track railway line.

Traffic management protocols need to be laid down in such a way as to include all functions that must be performed, as well as the time sequence of their performance.

5 REFERENCES

Safety of Railway Transport Act, Uradni list RS, No. 61 of 10 July 2007

Traffic Rules, Uradni list RS, No. 123 of 28 December 2007

Signalling Rules, Uradni list RS, No. 123 of 28 December 2007

Rules on brakes, safety devices, special devices and equipment of railway vehicles, Uradni list RS, No. 122 of 28 December 2007;

Instructions for traffic management and interlocking operation at the Preserje station, Slovenske železnice, d.o.o., dated 26 January 2009

Daniel Lenart, Undersecretary

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